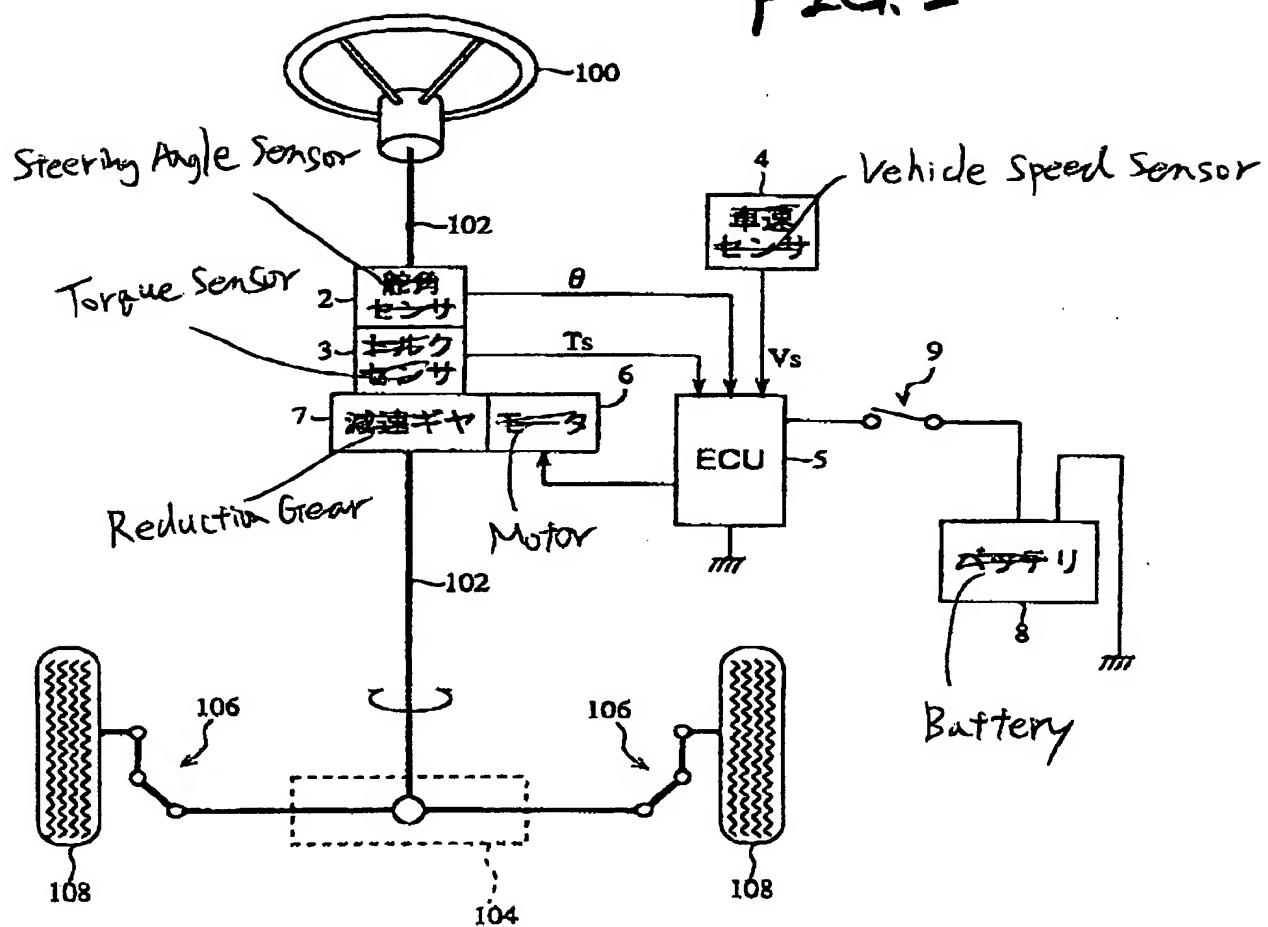


FIG. 1



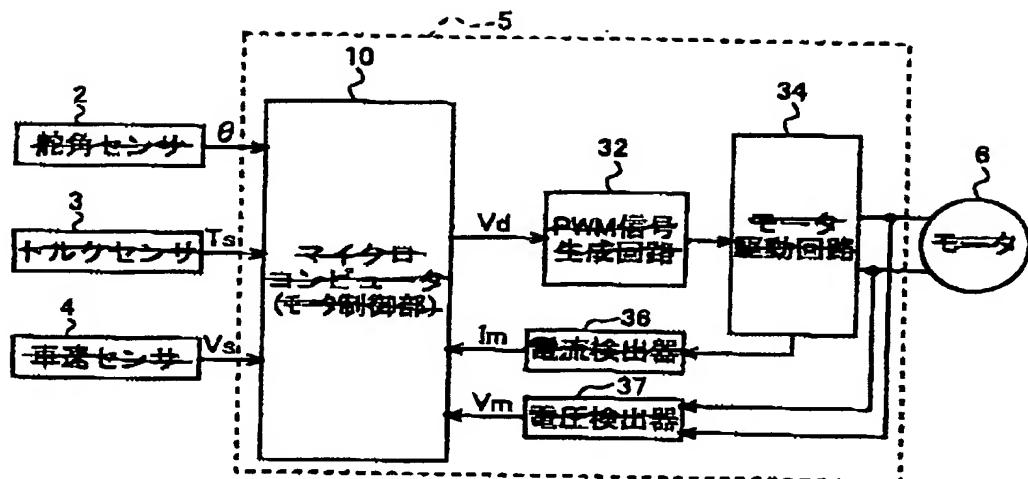
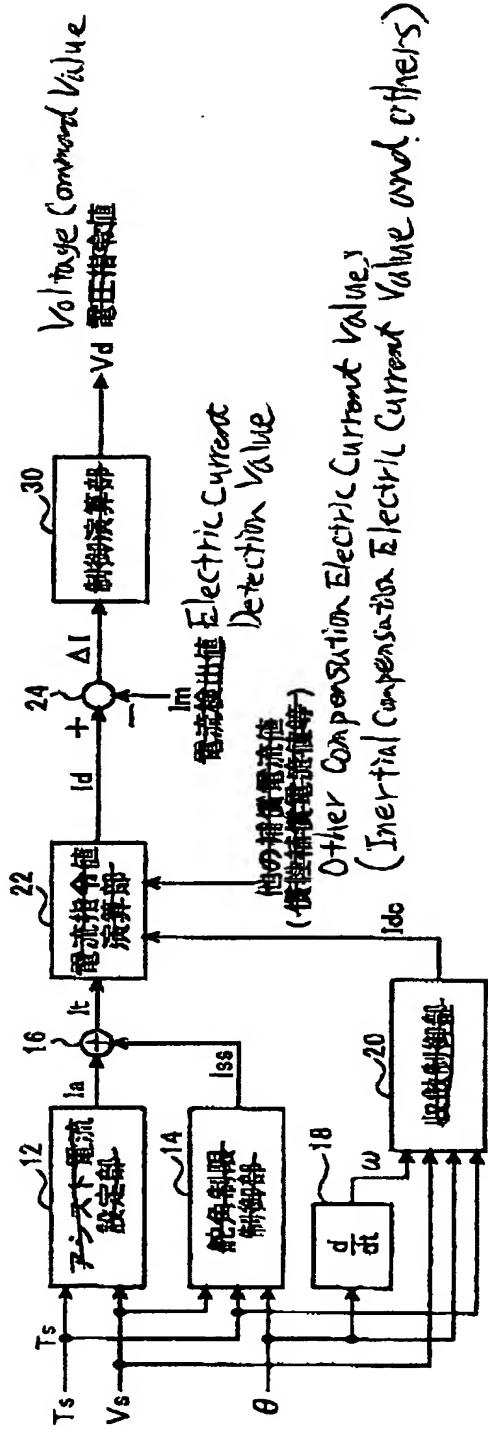


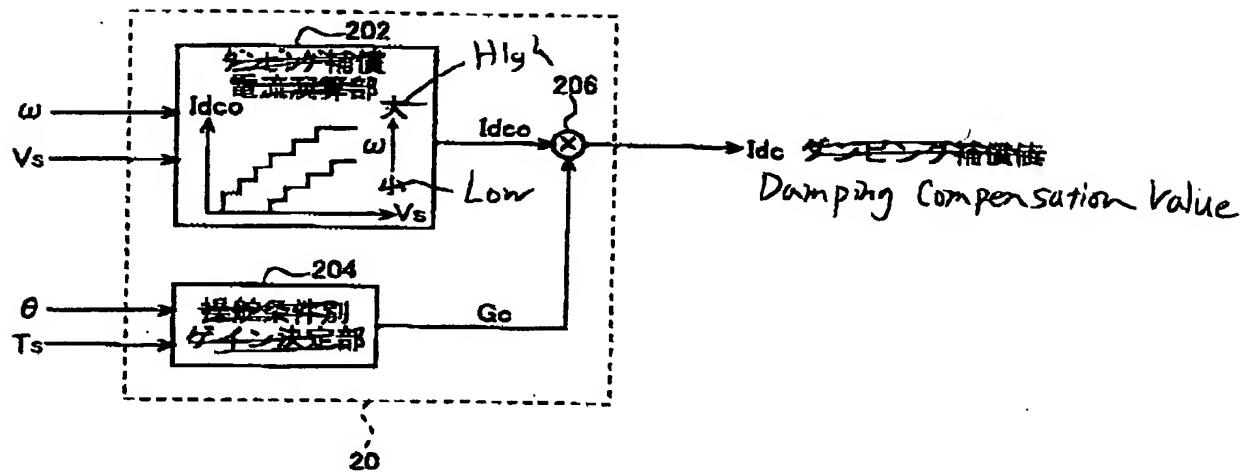
FIG. 2

- 2 Steering angle sensor
- 3 Torque sensor
- 4 Vehicle speed sensor
- 6 Motor
- 10 Microcomputer (Motor control section)
- 32 PWM signal generating circuit
- 34 Motor drive circuit
- 36 Electric current detector
- 37 Voltage detector

## FIG. 3



- 12 Assisting electric current setting section
- 14 Steering angle restricting control section
- 20 Convergence control section
- 22 Electric current command value calculating section
- 30 Control calculating section



202 Damping compensation electric current calculating section

204 Gain deciding section for each steering condition

FIG.4

Fig. 5A Fig. 5B

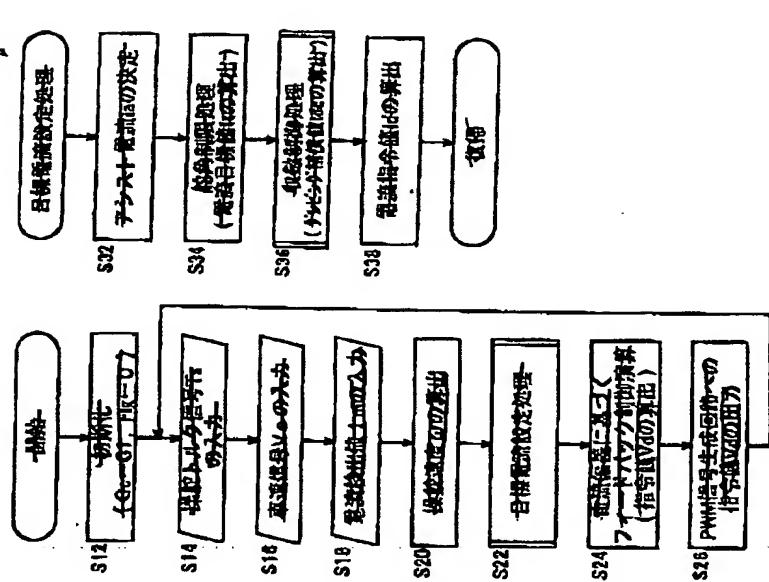


Fig. 5A

## S12 Initialization

|     |  |
|-----|--|
| S14 | Input of steering torque signal $T_s$  |
| S16 | Input of vehicle speed signal $V_s$  |
| S18 | Input of electric current detecting value $I_m$  |
| S20 | Calculation of steering speed $\omega$   |
| S22 | Target electric current setting processing   |
| S24 | Feedback control calculation according to electric current deviation (Calculation of command value $V_d$ ) |
| S26 | Output of command value $V_d$ to PWM signal generating circuit   |

Fig. 5B

Target electric current setting processing

S32 Decision of assisting electric current  $I_a$

S34 Steering angle restricting processing (Calculation of electric current target value  $I_t$ )

S36 Convergence control processing (Calculation of damping compensation value  $I_{dc}$ )

S38 Calculation of electric current command value  $I_d$

**Return**

|                |  |
|----------------|--|
| <b>Fig. 6A</b> | Convergence control processing                 |
| S62            | Damping compensation electric current<br>Idec) |
| S54            | Gain deciding processing (Decision)            |
| S56            | $Ids \leftarrow Gc \times Idec$                |
|                | Return   |
| <b>Fig. 6B</b> | Gain deciding processing                       |
| S62            | Has steering angle quantity $  \theta  $ is    |
| S64            | Start timer                                    |
| S66            | $Flg \leftarrow 1$                             |
| S68            | $Ts > Ts0$ ?                                   |
| S70            | $Flg \leftarrow 0$                             |
| S72            | Has steering angle quantity $  \theta  $ is    |
| S74            | Timer value $Tm \leq Tm0$ ?                    |
| S76            | $Flg = 1$ ?                                    |
| S78            | $Gc \leftarrow G2$                             |
| S80            | $Gc \leftarrow G1$                             |
|                | Return   |

**Fig. 6A**

```

graph TD
    A[Convergence control processing] --> B[S56 Damping compensation electric current calculation Decision of Ido]
    B --> C[S54 Gain deciding processing Decision of gain Gc]
    C --> D[S56 Ids ← Gc × Idc]
    D --> E[Return]
    
```

The flowchart illustrates the convergence control process. It begins with a general title "Convergence control processing". The first step is "Damping compensation electric current calculation (Decision of  $I_{do}$ )", which leads to "Gain deciding processing (Decision of gain  $G_c$ )". This is followed by the formula "Ids ←  $G_c \times I_{dc}$ ". Finally, the process concludes with a "Return" statement.